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January 29, 2019  
GO2-19-001

10 CFR 50.73

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555-0001

Subject: **COLUMBIA GENERATING STATION, DOCKET NO. 50-397**  
**LICENSEE EVENT REPORT NO. 2018-001-01**

Dear Sir or Madam:

Transmitted herewith is Licensee Event Report No. 2018-001-01 for Columbia Generating Station, a supplement to the LER submitted on July 17, 2018. This report is submitted pursuant to 10 CFR 50.73(a)(2)(iv)(A).

There are no commitments being made to the Nuclear Regulatory Commission herein. If you have any questions, or require additional information, please contact Mr. S. A. Nappi, Regulatory Compliance Supervisor, at (509) 377-4598.

Executed on this 29<sup>th</sup> day of January, 2019

Respectfully,

A. L. Javorik  
Vice President, Engineering

Enclosure: Licensee Event Report 2018-001-01

cc: NRC Region IV Administrator  
NRC NRR Project Manager  
NRC Senior Resident Inspector/988C  
CD Sonoda – BPA/1399  
WA Horin – Winston & Strawn

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to [Infocollects.Resource@nrc.gov](mailto:Infocollects.Resource@nrc.gov), and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

**LICENSEE EVENT REPORT (LER)**

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form  
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

<b>1. Facility Name</b> Columbia Generating Station	<b>2. Docket Number</b> 05000 397	<b>3. Page</b> 1 OF 3
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<b>4. Title</b> Automatic Reactor Scram Due to Main Transformer Trip
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5. Event Date			6. LER Number			7. Report Date			8. Other Facilities Involved	
Month	Day	Year	Year	Sequential Number	Rev No.	Month	Day	Year	Facility Name	Docket Number
05	18	2018	2018	- 001	- 01	01	29	2019	Facility Name	Docket Number 05000

<b>9. Operating Mode</b>	<b>11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (Check all that apply)</b>			
<b>1</b>	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
<b>10. Power Level</b>	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
<b>100</b>	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.77(a)(1)
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(2)(i)
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(ii)
		<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> Other (Specify in Abstract below or in NRC Form 366A)	

**12. Licensee Contact for this LER**

<b>Licensee Contact</b> Tracey Parmelee, Principal Engineer, Compliance	<b>Telephone Number (Include Area Code)</b> (509) 377-8395
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**13. Complete One Line for each Component Failure Described in this Report**

Cause	System	Component	Manufacturer	Reportable to ICES	Cause	System	Component	Manufacturer	Reportable to ICES
B	ED	RLY	ABB	Y					

<b>14. Supplemental Report Expected</b>	<b>15. Expected Submission Date</b>	Month	Day	Year
<input type="checkbox"/> Yes (If yes, complete 15. Expected Submission Date) <input checked="" type="checkbox"/> No				

**Abstract** (Limit to 1400 spaces, i.e., approximately 14 single-spaced typewritten lines)

On May 18, 2018, at 0651 PDT, Columbia Generating Station experienced a Main Transformer lockout relay trip. Coincident with the unplanned trip, an external line to ground fault occurred. A Reactor scram was automatically initiated by the plant in response to the transient.

All rods fully inserted as expected; no Emergency Core Cooling Systems actuated or injected. Plant Operators effectively maintained Reactor power, pressure and level. This event did not pose a threat to the health and safety of the public.

This event was reported via Event Notification #53410 under 10 CFR 50.72(b)(2)(iv)(B) as an event that resulted in actuation of the Reactor Protection System when the Reactor was critical.

The root cause of the Main Transformer lockout and Reactor scram was that the vendor-supplied Buchholz relay did not meet the standard performance requirements to be insensitive to external faults.



**LICENSEE EVENT REPORT (LER)  
CONTINUATION SHEET**

(See NUREG-1022, R.3 for instruction and guidance for completing this form  
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Columbia Generating Station	05000- 397	2018	- 001	- 01

**NARRATIVE****Plant Conditions**

At the time of the event, the plant was operating in Mode 1 at 100% power. There were no safety related structures, systems, or components that were inoperable at the start of the event that contributed to the event.

**Event Description**

On May 18, 2018, at 0651 PDT, an offsite line to ground fault occurred on the 500kV network, which supplied a peak current of approximately 7kA to the Main Transformer [XFMR]. The Buchholz relay [RLY] actuated causing the Main Transformer to trip and lock out. This resulted in an automatic Reactor [RCT] scram and subsequent trip of both Reactor Recirculation [AD] pumps [P].

Reactor power, pressure, and level were maintained as expected for this condition. Safety Relief [SB] Valves [V], MS-RV-1A and MS-RV-1B, opened on Reactor high pressure, as expected for this condition. After pressure lowered below the reset point, MS-RV-1B indicated open, therefore Operations removed power supply fuses for MS-RV-1B. Safety Relief Valve tailpipe temperatures confirmed that all valves were closed. Further investigation determined that there was faulty indication for MS-RV-1B, and that the valve had closed as expected when the reset point was reached.

Suppression Pool level and temperature remained steady within normal operating limits. Reactor Pressure Vessel water level was maintained with the Condensate [SD] and Reactor Feedwater [SJ] Systems with startup flow control valves [FCV] in automatic. Reactor pressure was maintained with the Turbine Bypass [JI] Valves controlling in automatic. No Emergency Core Cooling Systems actuated or injected. The transformer lockout initiated the fast transfer to the startup transformer, which supplied offsite power to the plant electrical loads.

This event is reportable as an event that resulted in actuation of the Reactor Protection System when the Reactor was critical per 10 CFR 50.73(a)(2)(iv)(A). This event was reported under 10 CFR 50.72(b)(2)(iv)(B) via Event Notification #53410.

**Immediate Corrective Actions**

Per plant procedures, Operations personnel restarted a Reactor Recirculation pump to maintain core recirculation, and commenced plant cooldown.

Bonneville Power Administration performed electrical diagnostic testing of the transformer and concluded that the overall health of the transformer was acceptable. Energy Northwest replaced the Buchholz relay and implemented a temporary modification to transfer the trip function of the Buchholz relay to the sudden pressure relay. The temporary modification increases the reliability of the trip function with a two out of three trip logic, and has no effect on any safety-related design functions. The Main Transformer was then placed back in service.



## LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
Columbia Generating Station	05000-397	YEAR 2018	SEQUENTIAL NUMBER 001	REV NO. 01

### NARRATIVE

#### Cause of Event

The Main Transformer lockout and Reactor scram were the direct result of the actuation of the Main Transformer's Buchholz relay due to a line to ground fault in the offsite power distribution system. The root cause of this event was that the vendor-supplied Buchholz relay did not meet the standard performance requirements to be insensitive to external faults.

#### Assessment of Safety Consequences

This event did not challenge the ability of Columbia Generating Station to safely shut down. All Emergency Core Cooling Systems were available to perform their intended safety functions. This event did not involve an event or condition that could have prevented the fulfillment of any safety function described in 10 CFR 50.73(a)(2)(v). This event posed no threat to the health and safety of the public or plant personnel.

#### Similar Events

Columbia has not previously experienced a Main Transformer trip or automatic scram due to actuation of a Buchholz relay. A review of the Corrective Action Program condition report database found no other occurrences of an event with similar characteristics.

#### Further Corrective Actions

Additional actions include implementing the temporary modification to remove the Buchholz trip and utilize sudden pressure relays for the transformer trip as a permanent configuration. The station will also correct the annunciator logic for the gas accumulation alarm.

Energy Industry Identification System (EIIS) Information codes from IEEE Standards 805-1984 and 803-1983 are represented in brackets as [XX] and [XXX] throughout the body of the narrative.